SCIENCE & EDUCATION Impact

Benefits From the USDA/Land-Grant Partnership

Pests on the Run

Drawing a line in the sand.

Pests are everywhere. They destroy the crops we rely on for food, clothing, jobs, and exports. They attack our lawns and shrubs. They invade our homes and workplaces. The damage they cause measures in the billions of dollars, and the aggravation they bring us cannot be measured.

But the public is not willing to pay any price to get rid of pests. The U.S. Department of Agriculture (USDA)/Land-Grant partnership is answering the call for new ways to deal with pests—ways that are more in keeping with our desire to live in greater harmony with the environment.

Payoff

- **Results from the research lab.** Thanks to two new tools—insect growth regulators and genetically engineered cotton—**Arizona** cotton growers have cut insecticide applications each year by half. A reliable test indicating when to stop insect control measures without hurting yields has eliminated two insecticide applications on **Mississippi** cotton fields and saved growers $30 an acre annually.

- **Bean worms bopped.** For years, dry bean growers in **Idaho** spent up to $125 an acre to control the western bean cutworm, treating 35,000 to 45,000 acres annually—whether or not cutworms actually were present—because insect sampling methods were unavailable. An **Idaho** researcher developed a reliable way to measure cutworm populations. Now, only 8,000 acres are treated each year, saving roughly $480,000 and reducing pesticide use by 6,400 pounds.

- **Paring down pesticides.** Pear growers in Southern **Oregon** cut synthetic pesticide use by as much as 80 percent through the use of environmentally friendly pest control methods. In an **Oregon State** research/extension project, the new methods were used on 500 acres of orchard, resulting in total pesticide costs of $206 per acre compared with $385 per acre for conventionally farmed orchards. Within five years, the new methods are expected to be in use on 50 percent to 80 percent of Oregon's 14,000 acres of pear and apple orchards.

RESEARCH, EDUCATION, AND EXTENSION AT WORK

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- **Formula for success.** Fruit tree orchards in **Virginia** receive 20 percent to 30 percent less pesticide, thanks to a new spraying formula developed at **Virginia Tech.** By calculating spray quantities based on tree size rather than number of acres, growers are saving about $500,000 a year in pesticide costs.

- **Lawn and landscape.** Faced with rising public pressure to reduce pesticide use, the **New Jersey** landscape and nursery industry turned to Rutgers. Since 1992, the number of landscape contractors using environmentally friendly pest control methods has jumped to 60 percent, and pesticide use has dropped from 240,000 gallons to 144,000 gallons.

- **Taking a bite out of blight.** A computer prediction program developed at **North Dakota State** helped **North Dakota** potato growers eliminate one or two unnecessary fungicide applications for potato blight. The program has been adapted for growers in **Idaho, Montana, Oregon,** and **Washington.**

- **Going natural improves nut net.** Walnut and almond growers are among the top 10 food-crop users of pesticide in **California.** Participants in a **UC-Davis** Extension project cut the amount of insecticide sprayed on their orchards to zero and reduced synthetic fertilizer use from 200 pounds to 107 pounds per acre. Cover-crop use increased from 12 percent to 92 percent, and releases of beneficial insects rose from 60 percent to 80 percent. Net returns were almost $200 per acre higher than those of comparable conventionally farmed orchards.

- **Terminating termites.** When termites closed the museum at the Statue of Liberty, officials turned to a termite monitoring and baiting system developed at **Florida.** The system feeds bait through monitoring devices, eliminating the need to drill holes through floors or walls to introduce insecticides. In a year, the termites were gone.

- **Apple orchard health.** Commercial apple growers in **Massachusetts** found new weapons—ecologically based methods—to fight flyspeck, a serious apple disease. The growers cut the use of fungicides by 50 percent, controlling the disease and reducing chemical residues at harvest.

- **Mite versus mite.** For years, **Indiana** apple growers fought to control European red mites. **Purdue** research showed that predator mites would eat the bad mites if growers didn't spray so much. When growers cut the number of chemical applications from three to one, they achieved better control of the pest and reduced average pesticide costs by 65 percent.

- **Clearing the air.** Crop dusting is alive and well in **Kansas.** Fly-in clinics sponsored by **Kansas State** significantly improved both the equipment and pilots' flying techniques. The incidence of spray system leaks, worn or plugged nozzles, and propwash problems has dropped from an average of 40 percent to 2 to 3 percent. Complaints by citizens and growers have decreased as well.

- **Spuds *au naturel*.** After **Maine** Extension spread the word about ecologically beneficial farming methods, potato growers in Maine reduced pesticide use by 50 percent and substituted composts and manures for more than half the chemical fertilizers used in conventional approaches. Yields have jumped by an average of 18 percent.

- **Raising grain.** After learning about new technology and processes from **Oklahoma State** Extension, operators of grain elevators in **Oklahoma** cut the number of fumigations from 2.6 per year to 1.3 by installing closed-loop fumigation systems. The system eliminates extra handling that damages grain, and fewer fumigations mean less residual pesticide in the grain—an advantage for the export market.

USDA **United States Department of Agriculture**
Cooperative State Research, Education, and Extension Service

USDA/Cooperative State Research, Education, and Extension Service in cooperation with the Extension Committee on Organization and Policy and the Experiment Station Committee on Organization and Policy.

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